What is claimed is:

1. An objective lens for an optical pick-up used for converging at least two light beams having different wavelengths on data recording surfaces of at least two optical discs having different recording densities, respectively, a wavelength of a light beam used for a first optical disc is longer than a wavelength of a light beam used for a second optical disc whose recording density is higher than that of the first optical disc,

wherein said objective lens has at least one surface on which a plurality of annular zones are formed,

wherein said at least one surface is divided into an inner area and an outer area outside the inner area, said inner area having a necessary size for providing a first NA required by the first optical disc, and said outer area having a necessary size for providing a second NA required by the second optical disc and higher than said first NA,

wherein, with regard to the light beam used for the second optical disc, an optical path difference generated between at least one of steps formed between adjacent annular zones of said plurality of annular zones within said outer area is lower by a predetermined amount than an integral multiple of the wavelength of the light beam used for the second optical disc.

2. The objective lens according to claim 1, wherein the optical path difference satisfies a condition:

$$(n-0.4) \leq OPD/\lambda < n \qquad \cdots\cdot\ (1)$$

where OPD is the optical path difference, λ represents the wavelength of the light beam used for the second optical disc, and n represents a natural number.

3. The objective lens according to claim 2, wherein the optical path difference OPD further satisfies a condition:

$$(n-0.25) \leq OPD/\lambda \leq (n-0.05) \qquad \cdots\cdot\ (2).$$

4. The objective lens according to claim 1,

wherein the steps between adjacent annular zones of said plurality of annular zones are formed such that, at each step, an outside annular zone of a step protrudes with respect to an inside annular zone of the step.

5. The objective lens according to claim 2,

wherein the natural number n satisfies a condition:

$$1 \leq n \leq 6 \qquad \cdots\ (5).$$

6. An objective lens for an optical pick-up used for converging at least two light beams having different wavelengths on data recording surfaces of at least two

optical discs having different recording densities, respectively, a wavelength of a light beam used for a first optical disc is longer than a wavelength of a light beam used for a second optical disc whose recording density is higher than that of the first optical disc,

wherein said objective lens has at least one surface on which a plurality of phase shift surfaces are formed as a plurality of annular zones,

wherein said at least one surface is divided into an inner area and an outer area outside the inner area, said inner area having a necessary size for providing a first NA required by the first optical disc, and said outer area having a necessary size for providing a second NA required by the second optical disc and higher than said first NA,

wherein, with regard to the light beam used for the second optical disc, a phase shift amount generated by at least a pair of adjacent annular zones within said outer area is lower by a predetermined amount than an integral multiple of 2π.

7. The objective lens according to claim 6, wherein the phase shift amount satisfies a condition:

$$2(n-0.4)\pi \le \phi < 2n\pi \quad \cdots\cdot (3)$$

where ϕ is the phase shift amount, and n represents a natural number.

8. The objective lens according to claim 7, wherein the phase shift amount ϕ further satisfies a condition:

$$2(n-0.25)\pi \leq \phi \leq 2(n-0.05)\pi \quad \cdots\cdot (4).$$

9. The objective lens according to claim 6,

wherein steps are formed between adjacent annular zones of said plurality of annular zones such that, at each step, an outside annular zone of a step protrudes with respect to an inside annular zone of the step.

10. The objective lens according to claim 7,

wherein the natural number n satisfies a condition:

$$1 \leq n \leq 6 \quad \cdots (5).$$

11. An objective lens for an optical pick-up used for converging at least two light beams having different wavelengths on data recording surfaces of at least two optical discs having different recording densities, respectively, a wavelength of a light beam used for a first optical disc is longer than a wavelength of a light beam used for a second optical disc whose recording density is higher than that of the first optical disc,

wherein said objective lens has at least one surface on which a diffracting structure is formed as a plurality

of annular zones,

wherein said at least one surface is divided into an inner area and an outer area outside the inner area, said inner area having a necessary size for providing a first NA required by the first optical disc, and said outer area having a necessary size for providing a second NA required by the second optical disc and higher than said first NA,

wherein a blazed wavelength in said outer area is lower by a predetermined amount than an integral multiple of the wavelength of the light beam used for the second optical disc.

12. The objective lens according to claim 11, wherein the blazed wavelength satisfies a condition:

$$0.9 \leq \lambda_0/m\lambda < 1.0 \quad \cdots\cdot (6)$$

where λ_0 is the blazed wavelength, λ represents the wavelength of the light beam used for the second optical disc, and m represents a diffraction order of the light beam used for the second optical disc diffracted by the diffracting structure within said outer area.

13. The objective lens according to claim 11, wherein said diffraction structure has positive refractive power.